



THE CAL-ePOWER 10 KW Vertical Axis Wind Turbine

**Expandable, adaptable, renewable power
Right where you need it....**



California Energy & Power
Changing the world...one revolution at a time.

**Made in
the USA**



Setting the Stage for Our Solution

Clearing the Air

Large Wind Turbines

- ❌ Create false RADAR signatures
- ❌ Need 60 Acres of Land / MW of power
- ❌ Projects stalled or stopped due to
 - ❌ wildlife concerns
 - ❌ lack of transmission lines



Vertical Axis Wind Turbines

- ❌ Are inefficient (<20%)
- ❌ Do not produce enough power for industrial-scale applications



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Our Elegant Solution :

Simple Design With Sophisticated Control

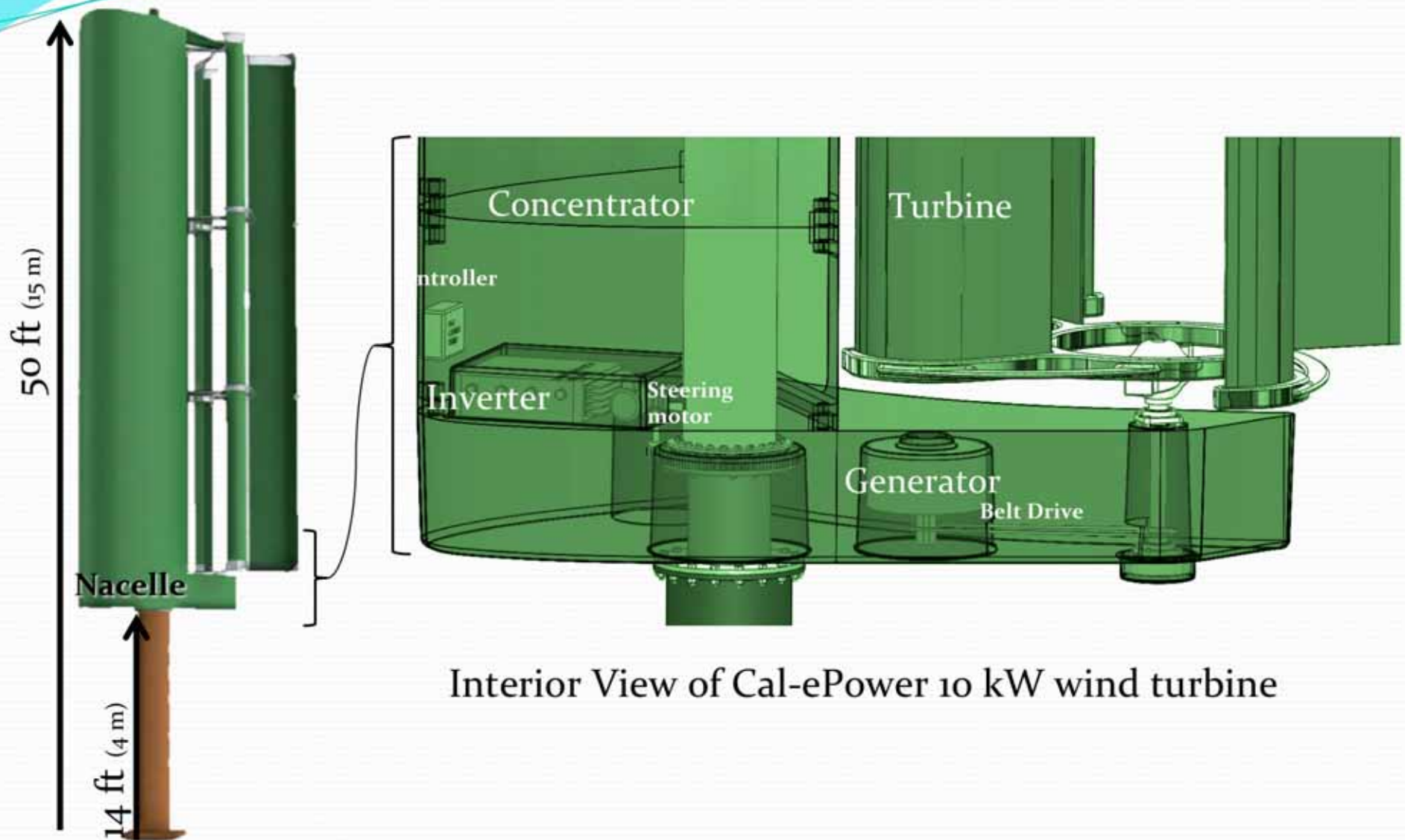
- ✔ Signal from wind vane positions concentrator into wind
- ✔ Anemometer signal determines position further
 - Low wind – open
 - High wind – close
- ✔ Turbine RPM sensor = further refinement
 - Maintains optimum power production
 - Consistent 10 kW in high winds
- ✔ Inverter can be tuned to your wind environment
- ✔ Self-starts, produces power from 5 mph - up to **70 mph**
- ✔ Can be deployed in distributed generation systems producing up to **10 MW** of industrial-scale power – **using less land**
- ✔ Designed to not interfere with RADAR or kill wildlife
- ✔ **RESULT = HIGHLY ADAPTABLE, CONTROLABLE POWER**



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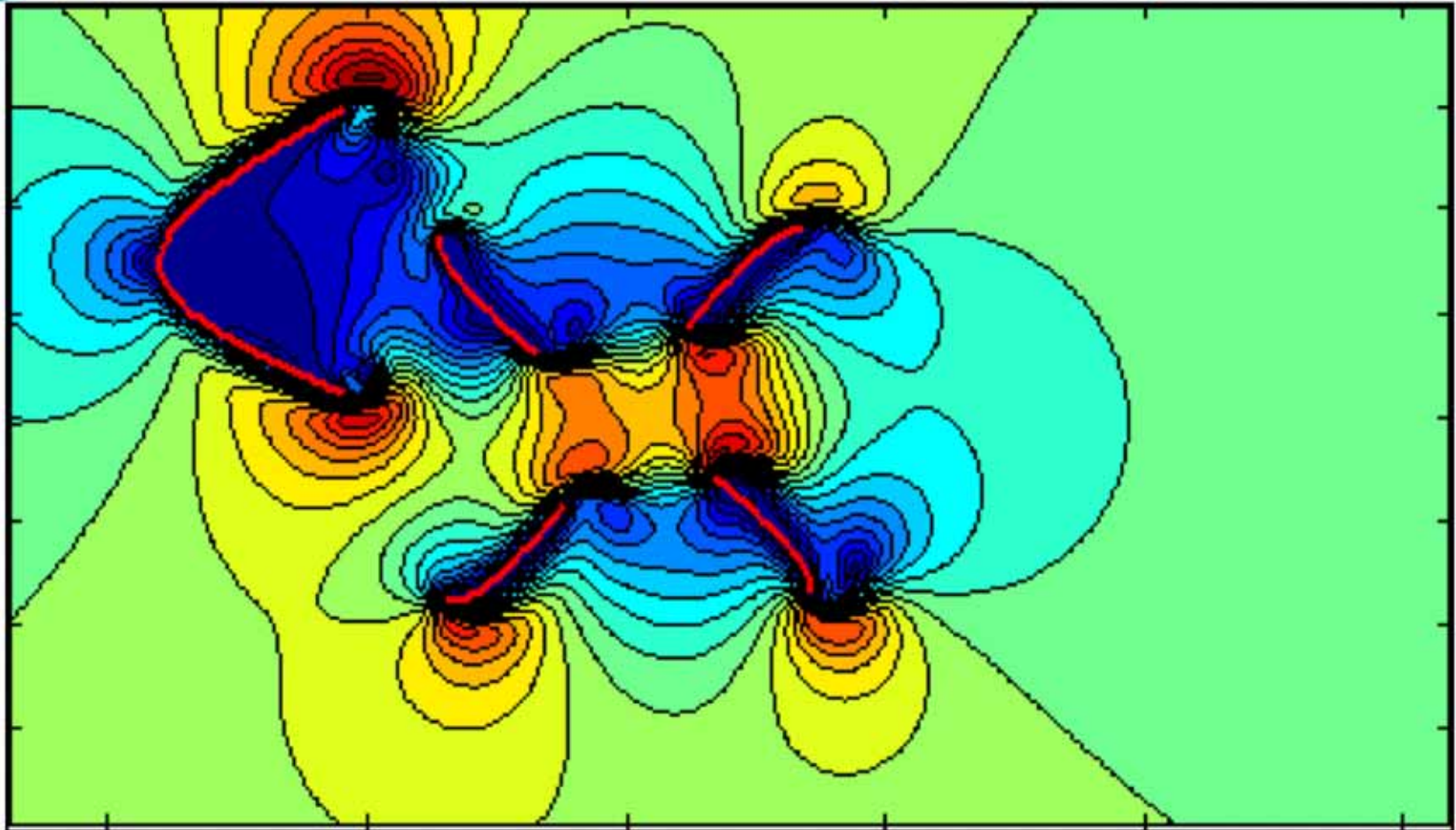


The Cal-ePower 10 kW VAWT – Dimensions & Components



Interior View of Cal-ePower 10 kW wind turbine

Solution Description – We Focus the Power



Simulation produced by Dr. Tim Colonius of the California Institute of Technology.

RED = High Wind Velocity

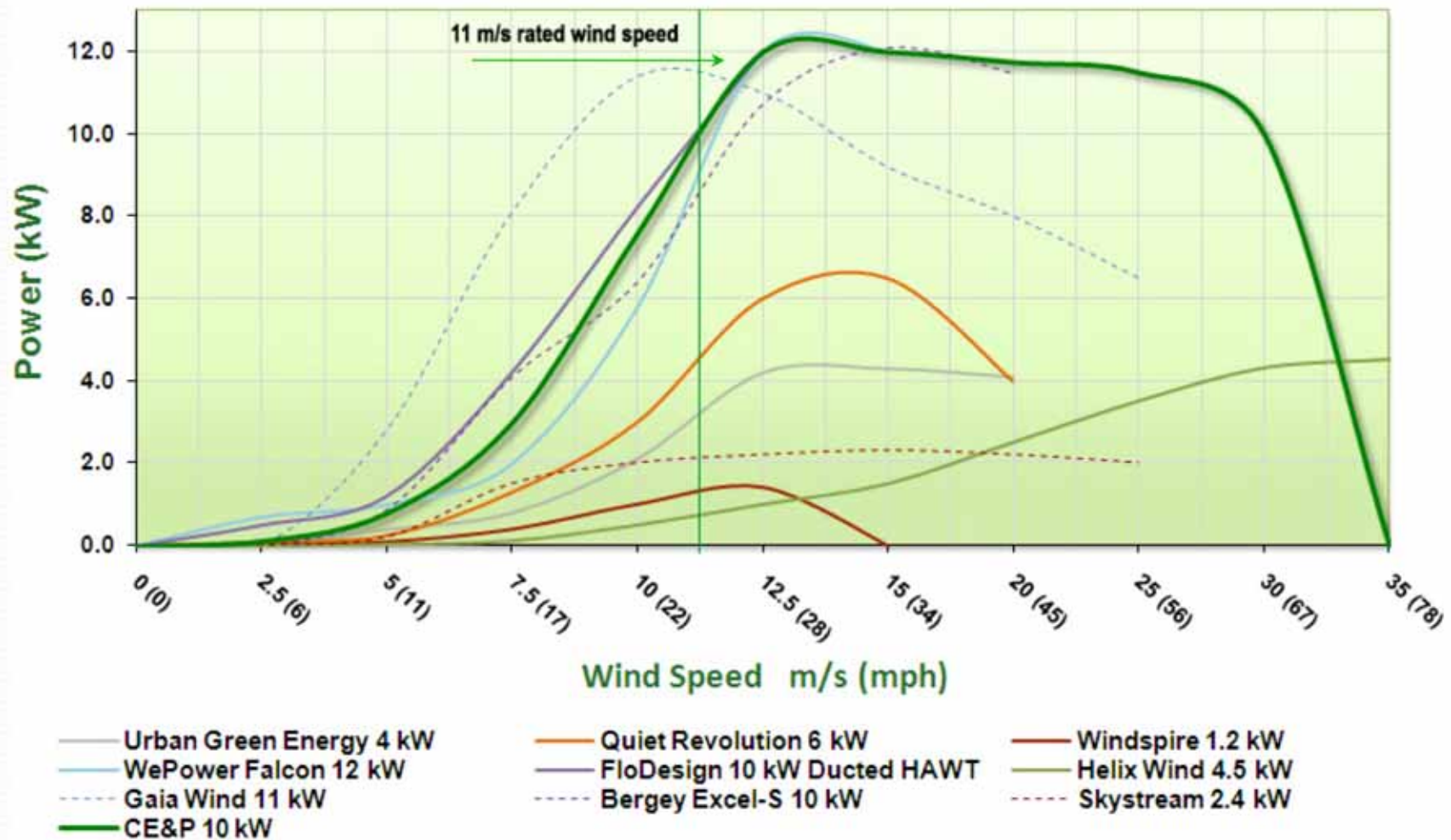
BLUE = Low Wind Velocity

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Our Solution = More Up-time

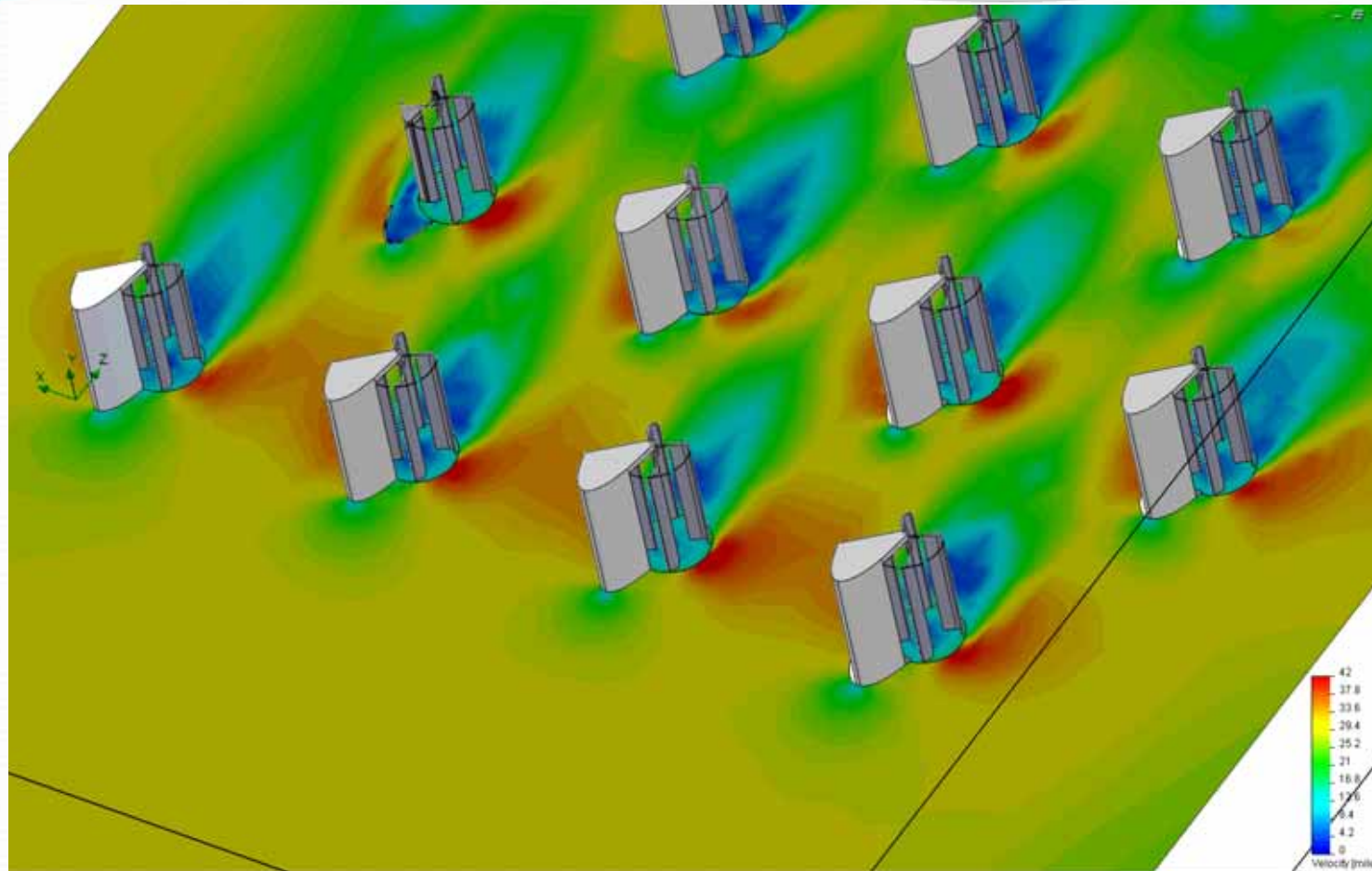
CE&P Power Curve vs. Other Wind Turbines < 12 kW



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Our Solution = Distributed Generation Systems



- ✓ Forward airfoils channel air into the attached turbines
 - ✓ Also channel air into following turbines
- ✓ Increase efficiency of turbines contained in the array

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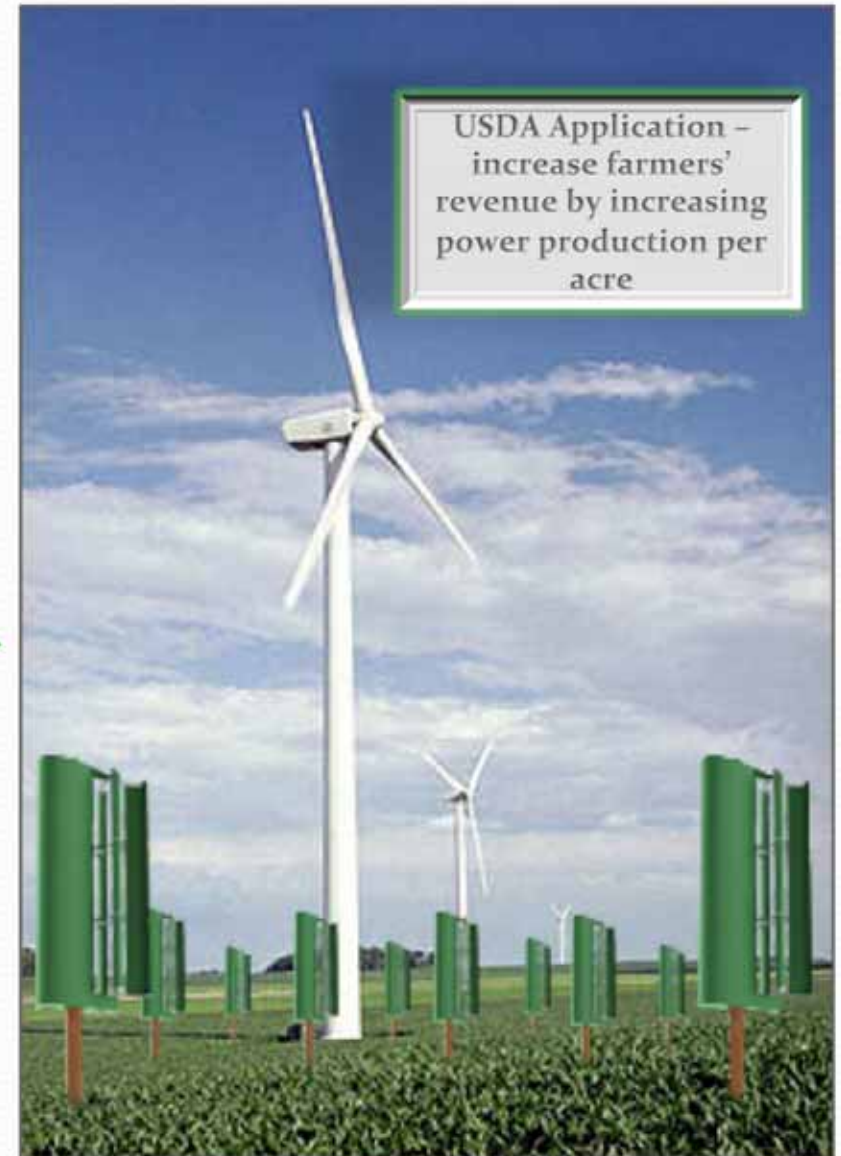
Our Solution = Superior Power Density

High-Density Power

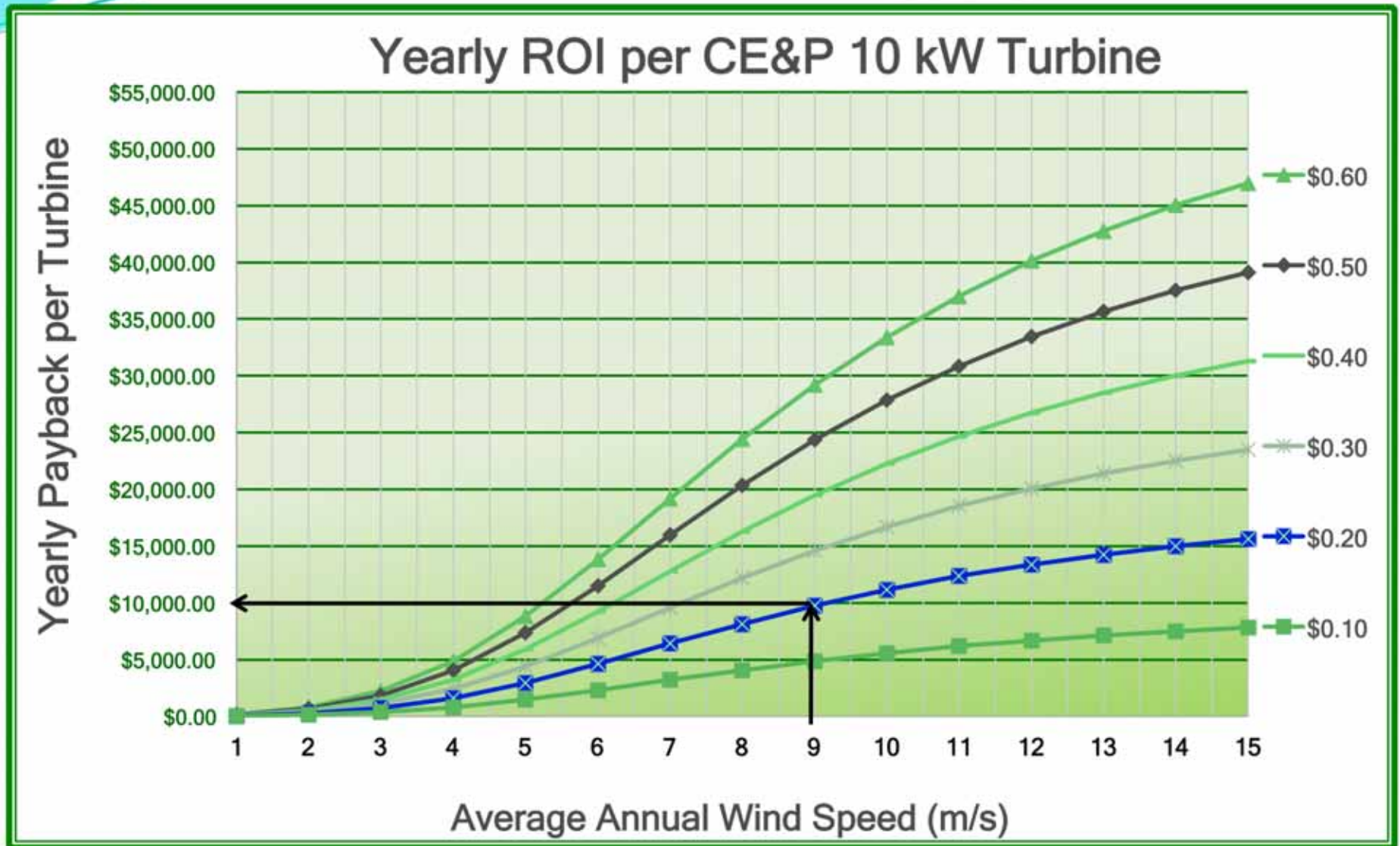
- ✓ More turbines/acre = More power/acre
- ✓ Large HAWTs - need more space
 - 60 Acres for each MW (AWEA)
 - = 17 kW per acre



- ✓ CE&P can theoretically exceed 17 turbines/acre
 - **10 times the power**/acre of large HAWTs



Our Solution = Faster ROI



Data based on Rayleigh Distribution of Wind Speeds and Cal-ePower 10 kW Theoretical Power Curve

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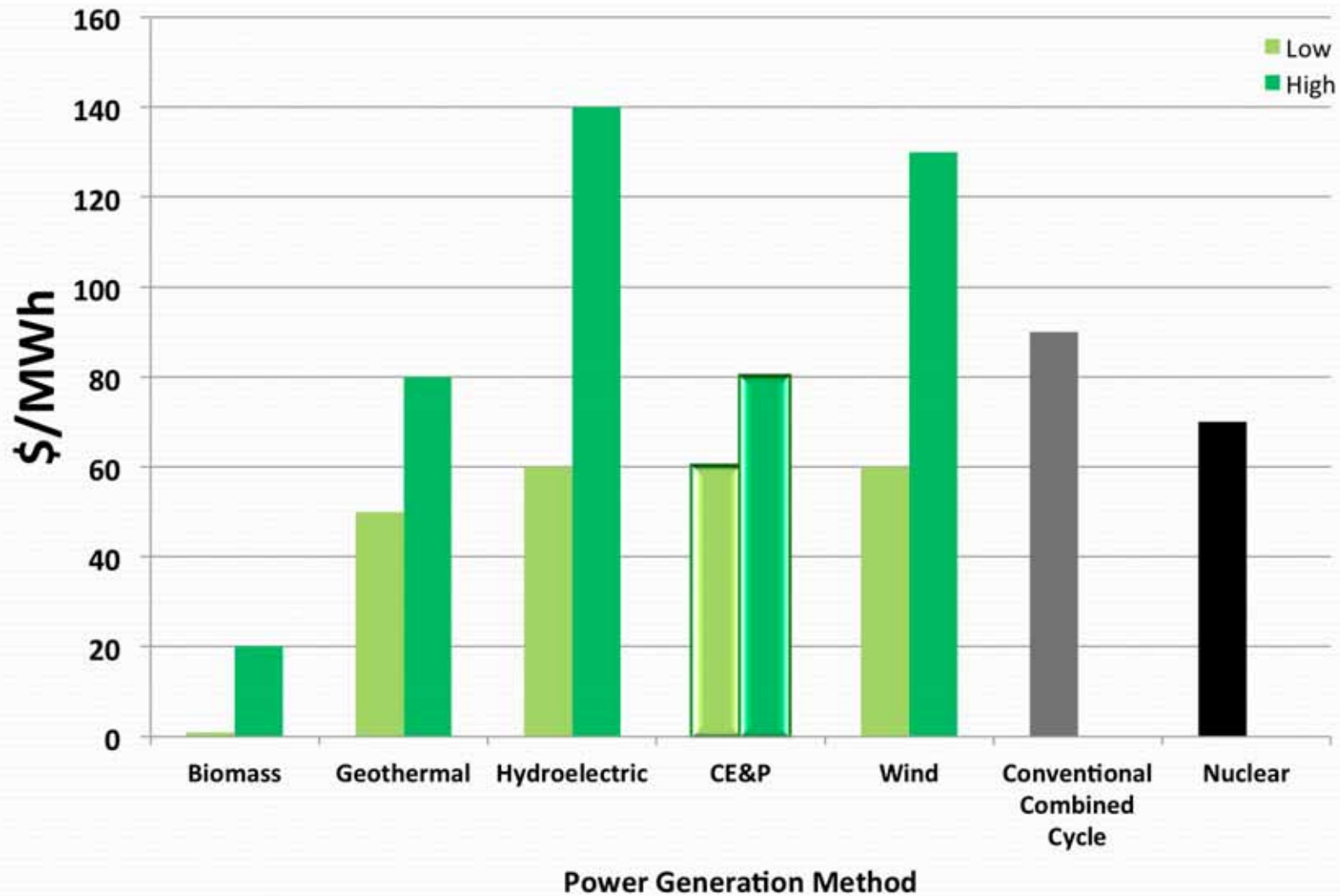
Our Cal-ePower 10 K has a lower price and levelized cost for power



Turbine Name	Cal-ePower	Windspire	Urban Green Energy	Quiet Revolution	Helix Wind	Skystream	Bergey	Gaia Wind
Turbine type	Vertical	Vertical	Vertical	Vertical	Vertical	Horizontal	Horizontal	Horizontal
Swept Area	30 m ²	7.4 m ²	13.8 m ²	13.6m ²	5.9 m ²	10.87 m ²	30.2 m ²	133 m ²
Turbine rated power claimed (rated wind speed)	10 kW (11 m/s)	1.2 kW (11 m/s)	4 kW (12 m/s)	7.4 kW (14 m/s)	4.5 kW (32 m/s)	2.4 kW (13 m/s)	10 kW (12 m/s)	11 kW (9.5 m/s)
Power rating at 11 m/s (standardized rated wind speed)	10 kW	1.2 kW	3 kW	4.2 kW	1 kW	2 kW	8.2 kW	11 kW
Tower Height (Height @ hub or mid-turbine)	4 m (15.5 m)	3 m (9.1 m)	5.5 m (7.8 m)	9 m (11.5 m)	4.6 m (7 m)	10.2 m (10.3 m)	24 m (24.1 m)	18 m (18.1 m)
Maximum efficiency and wind speed at max. efficiency	30% @ 11 m/s	25% @ 8 m/s	28% @12 m/s	28% @13 m/s	15% @ 11 m/s	35% @ 8 m/s	21% @ 8 m/s	29% @ 6 m/s
Retail Price/Watt at 11 m/s (Includes Tower & Inverter)	\$4.80	\$5.42	\$7.94	\$7.75	\$20.45	\$5.38	\$5.28	\$6.60
Levelized Cost of Power/kWh for 3 MW DG system @ 9 m/s	\$0.07	\$0.10	\$0.10	\$0.22	\$0.35	\$0.08	\$0.08	\$0.10
Years to Payback Purchase Price (@ \$0.15/ kWh & 7 m/s (16 mph))	~10 yr	~15 yr	~13 yr	~13yr	~50 yr	~10 yr	~9 yr	~11 yr

Information contained in this table was calculated from self-published power production numbers posted on the websites of each competitors' company, and from published price data. Levelized cost of power calculations were done using the NREL RET Finance calculator, and only include the cost of the turbine, tower and inverter. Our competitors' costs were back-calculated from retail price by assuming a 33% profit margin. The levelized cost calculations do not include the cost of installing the 3 MW DG system. Payback does not include government incentives of any kind.

Cal-ePower 10 kW is Comparable to Other Renewable & Conventional Generation



Data from the California Energy Commission

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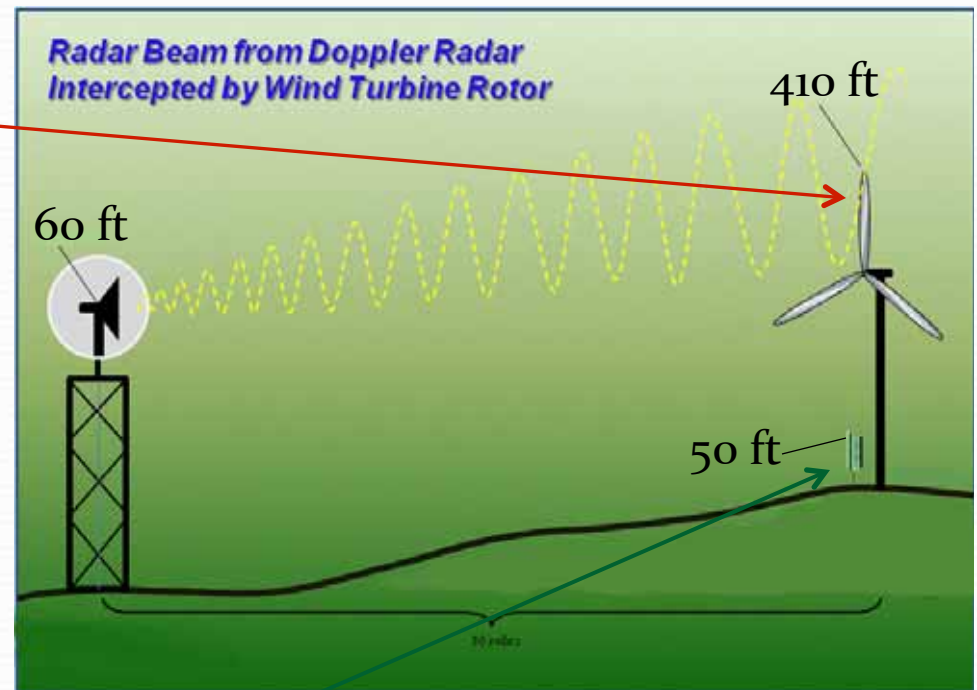
Cal-ePower 10 kW is Under the RADAR

✓ Less likely to produce false RADAR signals

- Large wind turbines can produce false radar signatures of storms and planes

✓ Our low height and composite construction means

- The Cal-ePower 10 kW turbine will not interfere with RADAR



What We Can Do For the Military

✔ Provide Wind Power Without RADAR Problems

✔ Greatly Reduce Electricity Costs

- With 6 m/s wind speeds (>13 mph)
- A 3 MW system has a levelized cost of power
 - \$0.08/kWh
 - Saves \$0.15-\$0.30/kWh in Hawaiian Islands

✔ Levelize Electricity Costs

- Over 20-year lifespan
- Easier Budgeting

✔ Reduce CO₂ Emissions by 15 tons/yr/turbine

- 3 MW System Saves 4,500 tons of CO₂/yr

✔ Work Within a Smart-Grid

- Computer-controlled power regulation
- Power from our DG system can be up- and down-regulated with demand



U.S. AIR FORCE



U.S. ARMY



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Stage of Development = In Production



- ✓ Initial Venture funding received
- ✓ Production initiated
- ✓ Three Demonstration Sites Planned
- ✓ Palm Springs, CA, Nova Scotia, and Oahu, HI
- ✓ Partnerships established with several ESCO and EPCs



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Our Vendors – Over 95% US Made



CREATIVE PULTRUSIONS, INC.



K. Short, Inc.



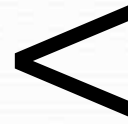
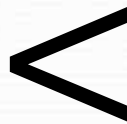
onset a smarter environment begins here

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Cal-ePower 10 kW Fills an Open Niche in the Wind Industry

Small Wind
Turbines
Residential Use



Large Wind Turbines
Utility-scale power

Cal-ePower 10 kW DG System
Industrial-Scale Power

CE&P Distributed Generation Systems

- 220 or 440 V systems
 - 10 kW – 10 MW
- Smart-grid compatible, controllable power
 - Power from home to utility scale

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Our Dynamic Green Advertising Solution



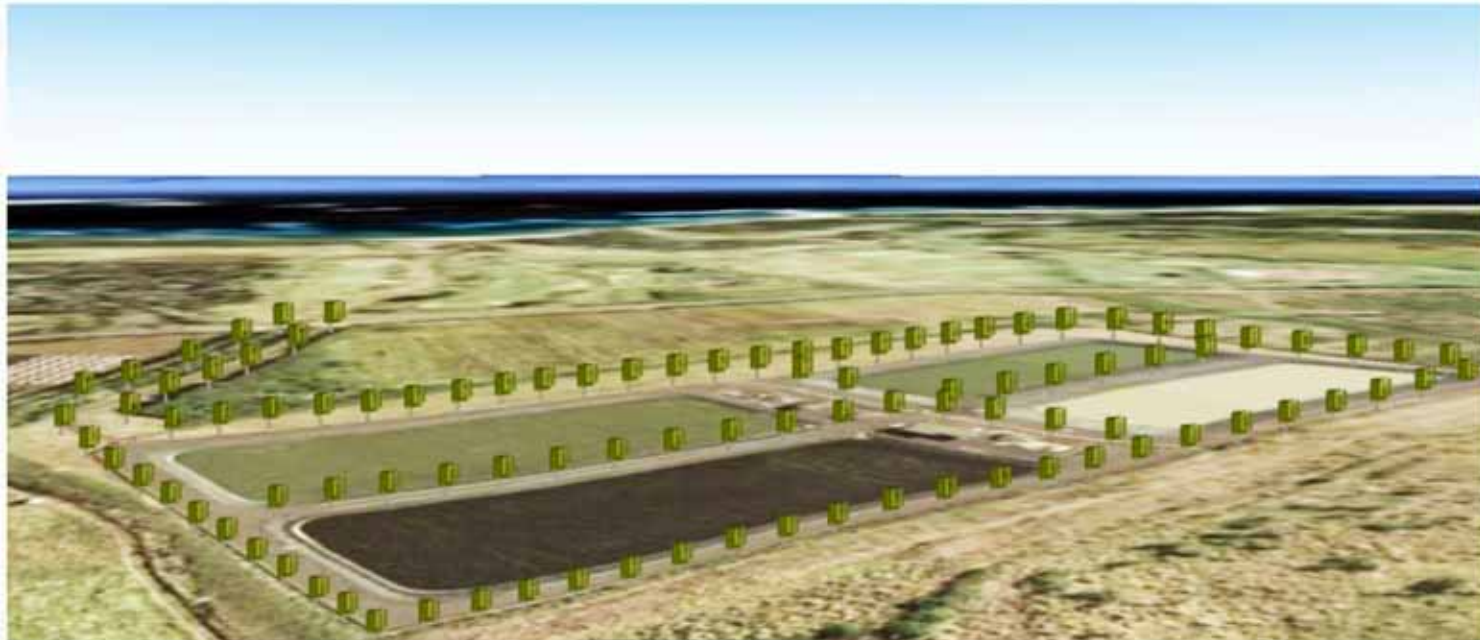
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Cal-ePower DG System Will Not Disrupt the Electrical Grid

☑ CE&P Distributed Generation Systems

- Less grid impact to lose 10 kW than 1 MW
- Concentrator smoothes wind spikes, keeping power more constant



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Benefits of the Cal-ePower 10 kW VAWT

- ✓ High Density, On-site, Controllable
- ✓ Power
- ✓ Will Not Interfere with Radar Systems
- ✓ Rapid Return on Investment
- ✓ Less Disruptive to the Grid
- ✓ Ease of Manufacturing
- ✓ Ease of Assembly
- ✓ Low O&M Costs
- High Durability



Our Team

Michael Allawos, President, COO

Vice President 2007-2008, President 2008-2011

Owned & Operated Mikana Mfg. Inc. Aerospace Manufacturing Plant 22 Years
Proficiency in Politics, International Diplomacy and Banking

William DeRuyter, Chief Engineer

Consultant 2007-2008, Chief Engineer 2008-2011

Plant Manager in Aerospace Manufacturing for Seven Years, Precision Instrument Maker,
Physics Department, University of Miami for Five Years
Proficiency in CNC Machining, CFD Computer Modeling, and Manufacturing

Dr. Summer DeRuyter, Research Director





Environmental Director 2008-2009, Research Director 2009-2011

B.A. in Biology, M.S. in Life Sciences, Ph.D. in Evolutionary Biology

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Opportunities to be part of the California Energy & Power Solution

-  Accepting orders for demonstration turbines
-  Accepting orders for distributed generation systems
-  Investment of \$4 Million for scaling up
-  Licensing Opportunities are available

Contact Information - Be a Part of the Future!

Contact:

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Michael Allawos, President/COO

Web-Site: <http://www.cal-epower.com/>



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